CALSPAN ADVANCED TECHNOLOGY CENTER

APPLICATIONS OF HCMM SATELLITE DATA

Contract No. NAS5-24263

Ninth Quarterly Report

8/23/79 - 11/23/79

Prepared for:

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Objectives:

The objectives of this investigation are to study the thermal properties of Great Lakes, Erie and Ontario, as they relate to water quality, lake hydrology and energy exchange; to study the urban heat island problem in selected areas adjacent to these lakes; and to refine techniques required to obtain accurate surface radiometric temperatures.

Problems:

The delays reported last quarter (receiving appropriate image data) have been resolved during this reporting period. A routine flow of transparencies has been occurring, and this increased volume of material has induced a slight change in image cataloging procedures. All images now received are first screened to determine whether cataloging (a time-consuming process) is required. This procedure has reduced the effort necessary to locate high quality imagery in the nearly 1000 images received at Calspan to date.

At this point the major problem with obtaining imagery data has been delayed delivery time on tape data products ordered from the HCMM Investigations Support.

Accomplishments:

Recently, overflight (satellite) imagery corresponding to underflights on May 22, August 14 and November 2 was received at Calspan. A summary comparison of target coverage for underflights and overflights during 1978 is provided in Table 1.

With the receipt of large numbers of images, a scenario of photos covering thermal bar development in Lake Ontario has been assembled. A listing of the images which documents the phenomenon is provided in Table 2. Several points regarding the photo scenario are summarized below:

1. Visually, the thermal bar inshore areas appear more turbid than associated offshore waters at several dates during bar development.

2. Overflight atmospheric conditions were satisfactory, and the imagery appears to be good in terms of percent cloud cover.

Significant Results:

No significant results this reporting period.

Publications:

No publications this reporting period.

Funds Expended:

Contractor's estimate of funds expended to date, 11/25/79: $31,284 representing 41% of total program effort.

Data Utility:

At present, the data we have been able to evaluate have proven suitable for our requirements. Only limited imagery analysis has been performed to date in anticipation of receipt of the most suitable data for detailed analysis.

Table 1. Summary Comparison of Target Coverage for Underflights and Overflights in 1978

Underflight Date	Lake Erie	Lake Ontario	Buffalo	Rochester	Syracuse
May 22 - Day	B	C	C	C	C
June 6 - Day	B	C	C	C	C
- Night	B	C	C	C	C
August 14 - Day		B	A	C	C
- Night			A	A	A
November 1 - Night			A	A	A
November 2 - Day		B	A	C	C

A = Underflight Coverage
B = Overflight Coverage
C = Combined Coverage
D = No Coverage

Table 2. Photo Scenario for Lake Ontario Thermal Bar in Spring, 1978

	Day		Night
Date	Visible	IR	IR
May 11	*	*	
May 22	*	*	*
May 26	*	*	*
May 27			*
June 1	*	*	
June 6	*	*	*
June 11	*	*	
June 12	*	*	
June 21			*
June 22			*
June 23	*	*	
July 4	*	*	

*Imagery in-house as of this reporting period.


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